MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1990 COMMERCIAL VESSEL PROGRAMME

REPORT: MFV CARHELMAR (BM 23): CRUISE: 1

STAFF: P A Large
B F M Harley

DURATION: Sailed Padstow 0215 h 8 March 1990
Docked Padstow 0500 h 12 March 1990

LOCALITY: Off Trevose Head (ICES Division 107f)

AIMS:

1. To collect maturity stage IV sole (Solea solea) ovaries for fecundity studies (J Horwood).

2. To collect maturity stage V, VI and VII sole ovaries for atresia studies (Dr Greer Walker).

3. To record sole catch data for port/starboard gear comparison studies (M Vince).

4. To observe the production of hydrated sole eggs over a 24 h period (P Witthames).

5. To collect length distributions and otolith samples of sole, plaice (Pleuronectes platessa), cod (Gadus morhua) and anglerfish (Lophius spp.).

NARRATIVE:

Staff travelled to Padstow by car on 7 March. CARHELMAR sailed on the morning tide of 8 March and commenced fishing 8 miles NNW of Trevose Head (ICES rectangle 30E4),using twin 4 metre beams rigged with 80 mm cod-ends. A total of thirteen 1¾ h tows were carried out between 8 and 10 March and catches of sole varied between ½ to 5 stone per haul. All sole caught were examined for sex and maturity stage, and length stratified samples of maturity stage IV ovaries were preserved in 4% formalin. The attempt was made to collect ovaries from 20 sole at each stage V, VI and VII. These samples were collected randomly for length within each maturity stage. Cod, plaice and anglerfish were measured and otolithed when time permitted.

On the same ground, the incidence of stages V (hydrated eggs present) and VI (running) female sole was monitored in catches from nine 1 h tows spread over a 24 h period commencing at 1330 h on 10 March. Additionally, all sole from these tows were sexed, staged (females only) and measured by maturity stage for starboard and port gears separately.

In an attempt to collect stage IV gonads from sole at the extremities of the observed length range, CARHELMAR then steamed 12 miles NE and commenced fishing at 1530 h on 11 March approximately 15 miles NNE of Trevose (ICES rectangle 30E5) on the grounds supporting a high density of small

sole (25-30 cm). After two tows, CARHELMAR steamed 24 miles SW and commenced fishing at 2100 h approximately 11 miles W of Trevose on grounds giving good catch rates of large sole. Fishing was terminated at 2300 h and the CARHELMAR docked at Padstow at 0500 h on Monday 12 March.

Throughout the trip wind speeds were relatively light (15 to 30 knots), although a persistent swell from the SW made scientific work difficult for the first couple of days.

Staff travelled back to Lowestoft on 12 March.

RESULTS

All sole caught from 29 hauls were sexed, and soles from 15 of these hauls were measured by sex and, for females, by maturity stage (Table 1 and Figures 1-5). Females with stage IV ovaries accounted for only 4% by number of the total measured catch of sole, 71% of which consisted of males. The numbers of ovaries preserved are given by length group and maturity stage in Table 2.

Numbers of sole captured during selected 1 h tows throughout a 24 h period are given in Table 3 and plotted in Figure 6. The catch-rate of sole (males and females combined) showed no evidence of a diurnal pattern. The highest catch rate was observed at dawn (Station 25, 0610-0710 h). Catches of running females (stage VI) were higher in the afternoon and evening than during the night and in the morning.

Numbers of plaice, cod, sole and anglerfish measured and otolithed are given in Table 4.

Five bass were returned (G Pickett).

P Large
20 March 1990

INITIALLED: JWH

DISTRIBUTION:

Basic list +
P Large
B F M Harley
J Horwood
M Pawson
D Symonds
P Witthames
Skipper Lovell

Table 1 Provisional length frequency data from 15 hauls for sole measured by sex and, for females, by maturity stage

Length maturity stage	Males	Females			
	All	IV	V	VI	VII
25	48	0	0	0	0
25-26	140	0	1	0	0
27-28	261	1	5	0	0
29-30	174	4	15	2	1
31-32	59	5	20	5	0
33-34	17	7	20	11	1
35-36	11	7	36	16	1
37-38	4	7	35	14	0
39-40	0	6	30	6	2
41-42	0	2	15	4	0
43-44	0	0	10	1	0
44	0	2	1	2	0
Total	714	41	188	61	5

Table 2 Provisional numbers of sole from which ovaries were preserved, by 2 cm length group and maturity stage. Targets are shown in ( )

Length (cm)	Maturity stage			
	IV	V	VI	VII
25	0 (10)	0	0	0
25-26	0 (7)	0	0	0
27-28	1 (7)	0	0	0
29-30	7 (7)	2	0	0
31-32	7 (7)	0	2	0
33-34	7 (7)	0	4	2
35-36	7 (7)	6	3	0
37-38	7 (7)	4	6	2
39-40	7 (7)	4	1	1
41-42	7 (7)	2	2	1
43-44	2 (7)	2	1	0
44	6 (10)	0	2	0
Total	58 (90)	20 (20)	21 (20)	7 (20)

Table 3 Provisional numbers of sole caught on the same ground throughout a 24 h period

Sex and maturity stage	Station/time								
	15 1400	17 1545	18 1810	20 2205	22 0030	24 0505	25 0640	27 1030	28 1205
Male all	41	37	39	68	36	44	69	44	49
Female stage IV	3	1	3	8	3	4	5	2	0
" V	5	10	8	17	11	5	27	21	8
" VI	5	8	5	7	2	0	2	3	3
" VII	0	1	0	0	0	1	1	0	0
Total	54	57	55	100	52	54	104	70	60

Table 4 Provisional numbers of fish measured and otolithed by species

Species	Measurements	Otoliths
Cod	30	26
Plaice	318	25
Sole	1050	147
L. pisc.	5	5

FIG 1 LENGTH FREQ. DISTRIBUTION – MALES

STNS 1,8,10,14,15,17,18,20,22,24,25,27,28,29

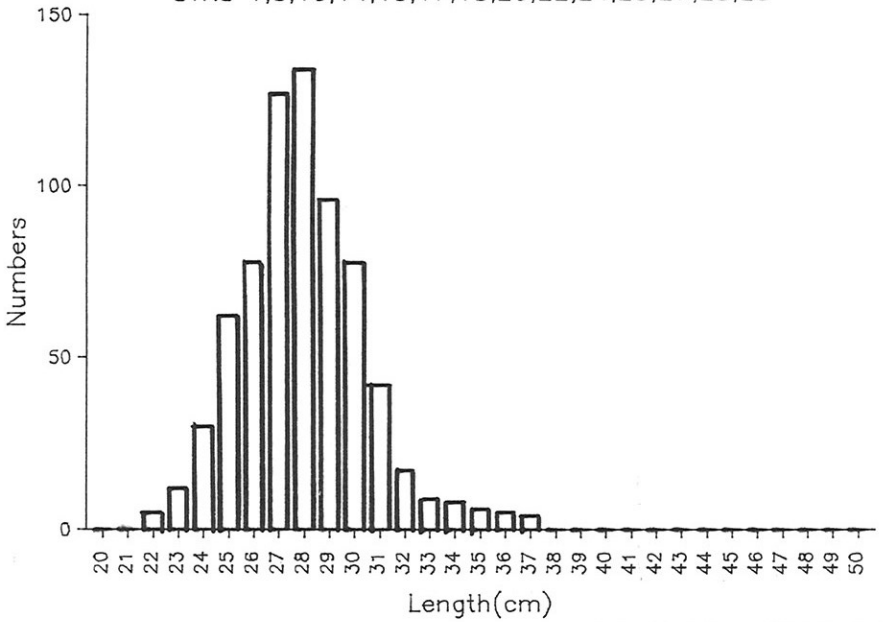

FIG 2 LENGTH FREQ. DIST.– FEMALES STAGE IV

STNS 1,8,10,14,15,17,18,20,22,24,25,27,28,29

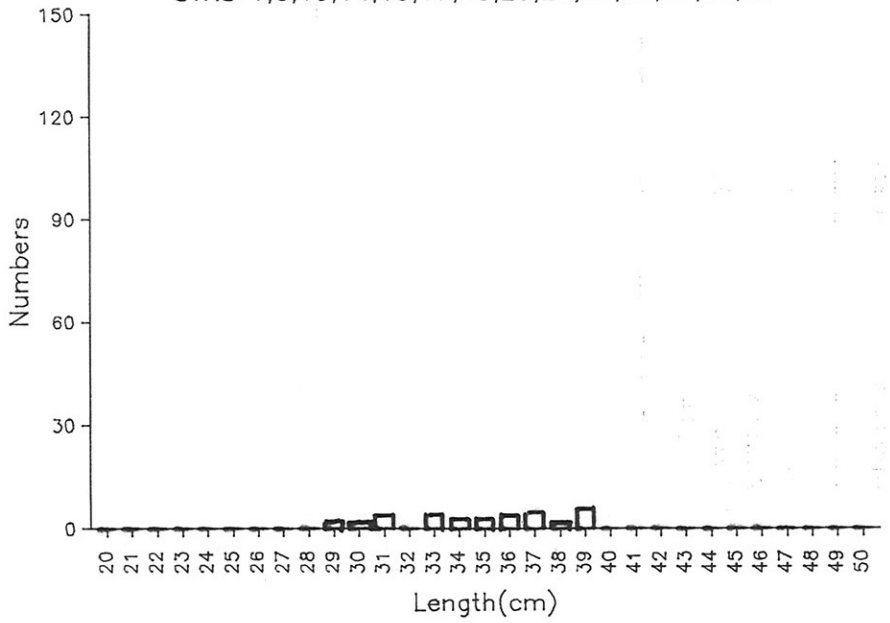

FIG 3 LENGTH FREQ. DIST.– FEMALES STAGE V

STNS 1,8,10,14,15,17,18,20,22,24,25,27,28,29

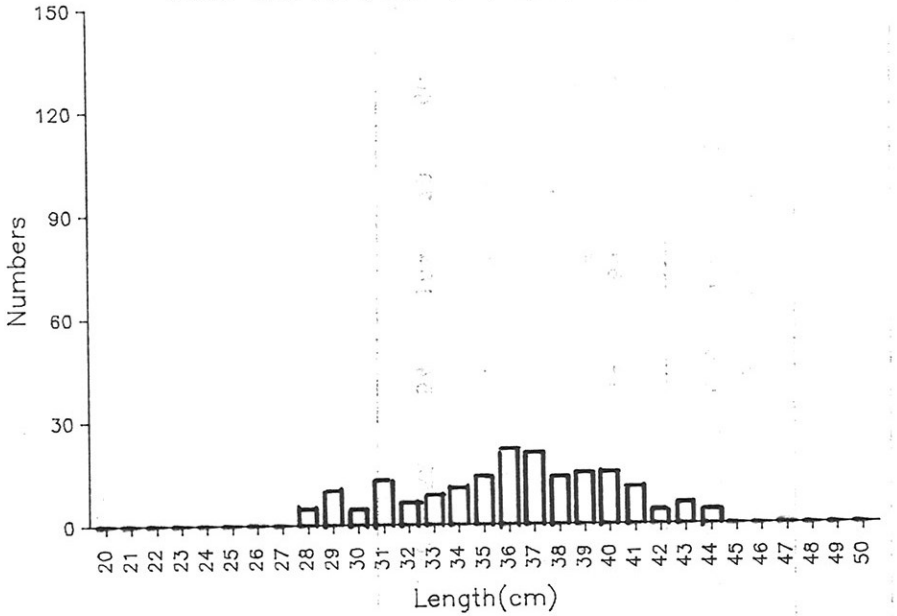

FIG 4 LENGTH FREQ. DIST.– FEMALES STAGE VI

STNS 1,8,10,14,15,17,18,20,22,24,25,27,28,29

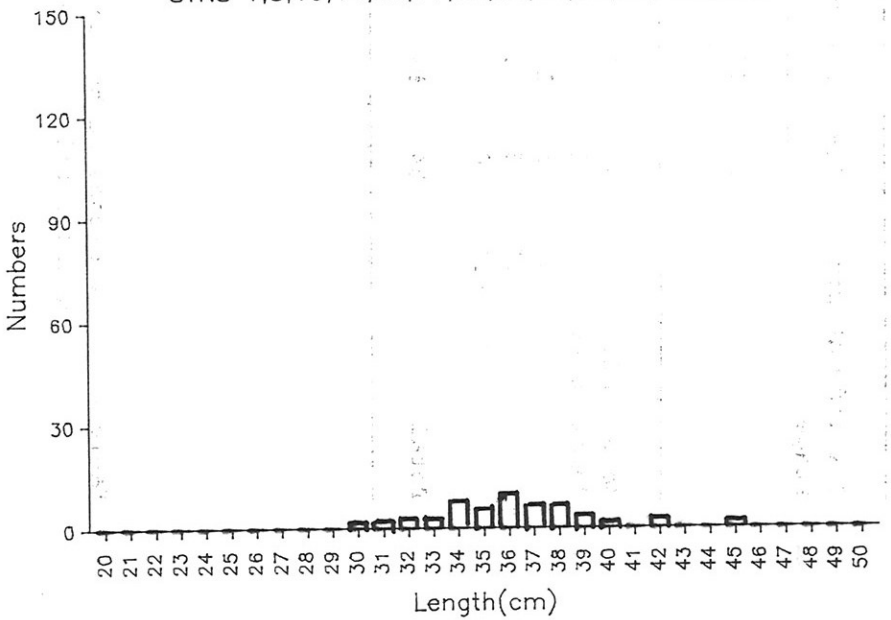

FIG 5 LENGTH FREQ DIST.– FEMALES STAGE VII

STNS 1,8,10,14,15,17,18,20,22,24,25,27,28,29

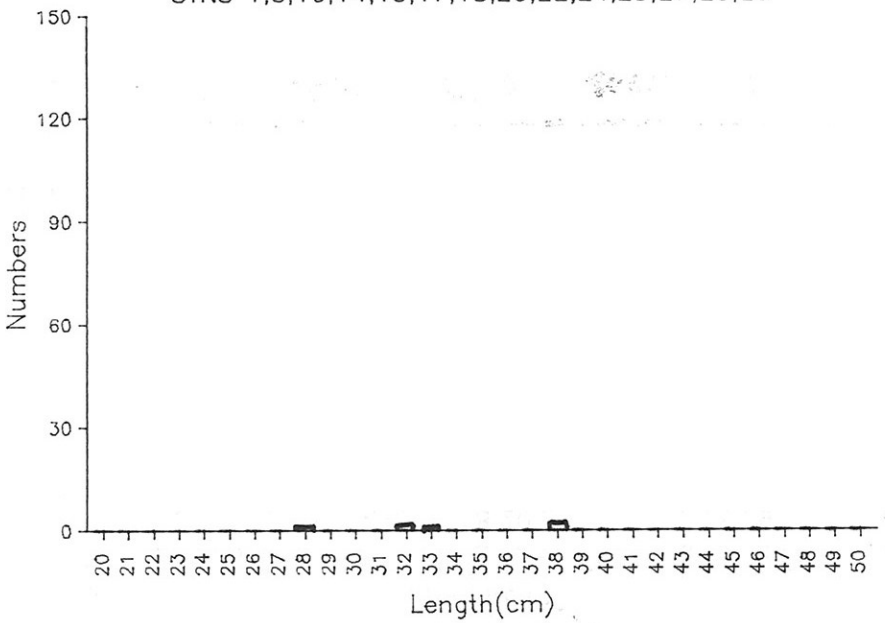

Figure 6. Catch nos/hr of sole over a 24h period.